From: Lake, Paul
To: Bardo, Kenneth
Subject: FW: Solutia, Sauget, IL - Initial Sampling Results from East St. Louis Wells ESL-MW-A, C1, and D1
Date: Monday, April 15, 2013 7:20:53 AM

Ken,

IDNR's consultant for NRD is asking for supplemental sampling data Solutia is collecting. I don't believe I have the data to which he is referring (4Q11 to 1Q13) or a map submitted by Solutia showing the locations of the wells. If it is not too much trouble, can you please forward this information?

Thank you,
Paul.

From: Jamie Holmes [mailto:jholmes@stratusconsulting.com]
Sent: Wednesday, April 10, 2013 5:52 PM
To: Lake, Paul
Cc: Heavisides, Tom
Subject: RE: Solutia, Sauget, IL - Initial Sampling Results from East St. Louis Wells ESL-MW-A, C1, and D1

Paul,

Supplemental groundwater sampling data for 1Q13 should be available about now. Can you please try to make sure that Ken sends those to you? You sent me supplemental data from TestAmerica for 4Q11 and 1Q12, but I have not seen any data reports since. In the email below, Jerry Rinaldi from Solutia pasted data from ESL-MW-D1 and describes a notable decline in chlorobenzene concentrations at GWE-5D. Do you have those other 2012 data reports? I don't. Jerry did not address the fact that benzene and 1,4-dichlorobenzene also exceed (or exceeded, as of 2/20/2012) MCLs in GWE-5D. Did they decline too?

I'm curious to see what the concentrations are now.

The only well location information I have for the ESL wells (MW-A, MW-C1, and MW-D1) is from a scan of a google map on which Ken (presumably) drew dots with a colored pencil. If you have come across any other figures that show those well locations, can you please send those also?

Thanks,
Jamie

From: Lake, Paul [mailto:Paul.Lake@Illinois.gov]
Sent: Wednesday, January 02, 2013 6:34 AM
To: Carson, Robert; Watson, Rob
Cc: Morgan, James L.; Ryan, Michelle; Rettig, Todd; Heavisides, Tom; Jamie Holmes
Subject: FW: Solutia, Sauget, IL - Initial Sampling Results from East St. Louis Wells ESL-MW-A, C1, and D1

An update from Ken Bardo on the groundwater plume north of the Krummrich Plant…

From: Bardo.Kenneth@epamail.epa.gov [mailto:Bardo.Kenneth@epamail.epa.gov]
Sent: Thursday, December 20, 2012 10:44 AM
To: Gobelman, Steven L
Cc: Lake, Paul
Subject: Fw: Solutia, Sauget, IL - Initial Sampling Results from East St. Louis Wells ESL-MW-A, C1, and D1

hi, steve. thought you might be interested in the latest data regarding the Solutia chlorobenzene plume. i've plotted well locations on the attached map. the plume (red dots) has been delineated up to Trendley Ave. and the plume appears to be lined up with the interstate and moving toward the Missouri Ave. IDOT wellfield. we will need more data to the north to see how far it goes. under very low river conditions, it may try to discharge to the river too in the vicinity of the casino. we expect to meet with Solutia in early-january. can you let me know if there any deep observation wells (OW-3?) near the wellfield that we might task Solutia to sample? thanks and have a great holiday, ken

-----Forwarded by Kenneth Bardo/R5/USEPA/US on 12/20/2012 10:32AM -----

To: Kenneth Bardo/R5/USEPA/US@EPA
From: "Rinaldi, Gerald M" <gmrina@solutia.com>
Date: 12/19/2012 05:32PM
Cc: "Bumb, Cathleen S" <csbumb@solutia.com>, "Smith, Steven D" <sdsmit@solutia.com>, Charles Newell <cjnewell@gsi-net.com>
Subject: Solutia, Sauget, IL - Initial Sampling Results from East St. Louis Wells ESL-MW-A, C1, and D1

In my 11/21/12 e-mail, I reported that Solutia had completed installation of Deep Hydrogeologic Unit (DHU) groundwater monitoring wells ESL-MW-A, C1, and D1 (see first attachment for locations and second for water levels) in East St. Louis (ESL). The purpose of this e-mail is to provide the following preliminary report of the initial sampling of these wells.

Sample ID	Sample Date	Chemical	Result (ug/L)	Lab Qualifier*	Reporting Limit	Screening Criteria (ug/L)
ESL-MW-A-1112	11/20/12	Benzene	1	U	1	5
ESL-MW-A-1112	11/20/12	Chlorobenzene	2.2		1	100
ESL-MW-A-1112	11/20/12	1,2-Dichlorobenzene	1	U	1	600
ESL-MW-A-1112	11/20/12	1,3-Dichlorobenzene	1	U	1	6.3
ESL-MW-A-1112	11/20/12	1,4-Dichlorobenzene	1	U	1	75
ESL-MW-D1-1112	11/20/12	Benzene	35		20	5
ESL-MW-D1-1112	11/20/12	Chlorobenzene	1800		20	100
ESL-MW-D1-1112	11/20/12	1,2-Dichlorobenzene	20	U	20	600
ESL-MW-D1-1112	11/20/12	1,3-Dichlorobenzene	20	U	20	6.3
ESL-MW-D1-1112	11/20/12	1,4-Dichlorobenzene	55		20	75
ESL-MW-C1-1112	11/20/12	Benzene	1	U	1	5
ESL-MW-C1-1112	11/20/12	Chlorobenzene	3.2		1	100
ESL-MW-C1-1112	11/20/12	1,2-Dichlorobenzene	1	U	1	600
ESL-MW-C1-1112	11/20/12	1,3-Dichlorobenzene	1	U	1	6.3
ESL-MW-C1-1112	11/20/12	1,4-Dichlorobenzene	1	U	1	75

* U = not detected at reporting limit
The shaded cells indicate that the MCLs for benzene and chlorobenzene were exceeded at ESL-MW-D1. According to the highlighted fourth "bullet" under "Other Issues" in my 7/30/12 e-mail below, under such circumstances, "Solutia will discuss with EPA to determine if additional wells need to be installed." Before considering any such possibility, we propose that these three wells be monitored for three more quarters (for a total of four) according to the highlighted third "bullet" under "Step 2A" in my 7/30/12 e-mail below. This proposal is based in part on the following chlorobenzene results ranging over (in fact, declining by) an order of magnitude in the five samples collected to date at DHU well GWE-5D (see attachments for location): 12/05/11 - 1600 ug/L; 02/20/12 - 1900 (1700 duplicate); 05/21/12 - 980; 08/15/12 - 510; and 11/19/12 (at the same time as above for ESL-MW-A, C1, and D1) - 150
I will be on vacation 12/22 - 1/2, but please feel free to call me to discuss in the new year.
Happy holidays,
Jerry

From: Rinaldi, Gerald M
Sent: Monday, July 30, 2012 2:02 PM

To: 'Bardo.Kenneth@epamail.epa.gov'
Cc: Bumb, Cathleen S; Smith, Steven D; Charles Newell; 'Richard Murawski'; 'rtkay@usgs.gov'
Subject: RE: Solutia, Sauget, IL - Additional Groundwater Monitoring

As we discussed during a July 27 phone call, this e-mail provides a revised proposal for resolving US EPA's request for additional groundwater sampling in East St. Louis, responding to your July 18 comments on our July 13 proposal.

First, let me reiterate Solutia's position (as we discussed during our June 26, 2012, meeting) that the chlorobenzene plume to the north of the W.G. Krummrich Plant (WGK) is not causing a risk to human health or the environment. Nor can the groundwater in East St. Louis be used by anyone due to city ordinance.

Due to the significant variability of the Mississippi River surface water elevation and the potential variability of pumping rates from the Illinois Department of Transportation (IDOT) de-watering wells, the specific location of a plume boundary (north of WGK) will no doubt change over time. Additional wells in East St. Louis will largely be monitoring the impact of the Mississippi River elevations and the IDOT pumping rates, not potential sources or actions being taken by Solutia. In addition, the cities of East St. Louis and Sauget Illinois have been an industrial center for over 100 years. We expect there have been a number of potential industrial sources of chemicals to groundwater over the last 100+ years, in particular benzene.

As you know, Solutia is spending many millions of dollars implementing the Chlorobenzene Process Area source reduction requirements set forth in the US EPA's Final Decision for the Krummrich Plant.

Nevertheless, Solutia proposes the following course of action to resolve US EPA's concerns related to plume delineation:

Step 1

- Research the property ownership records in the vicinity of the potential well locations A, B, C1, C2, D1 and D2 (see attached drawing). All of the locations on the attached map are approximate, as we will try to locate any geoprobe samples or wells on government-owned/controlled property.

- Seek access agreements to allow the geoprobe testing and well construction and monitoring rights at Location A.

- Once access approval has been granted for Location A, take geoprobe (or similar technology) groundwater samples at approximately 40 feet below ground surface (bgs), 100 feet bgs, 110 feet bgs, and 120 feet bgs, or to bedrock, whichever comes first.

- Analyze these four Location A groundwater samples for monochlorobenzene (MCB), 1, 2 dichlorobenzene, 1, 3 dichlorobenzene, 1, 4 dichlorobenzene, and benzene.

- Either Step 2A or Step 2B will be implemented, depending upon the analytical results of the Location A geoprobe analysis. If all three Location A Deep Hydrogeologic Unit (DHU) groundwater samples are less than the following values, then Step 2A would be performed

Chemical Monitoring List

- MCB – 100 µg/L
- 1,2 dichlorobenzene – 600 µg/L
- 1,3 dichlorobenzene – 6.3 µg/L
- 1,4 dichlorobenzene – 75 µg/L
- benzene – 5 µg/L

(The monitoring levels above are Maximum (Drinking Water) Contaminant Levels (MCL))
If the MCB or any of the dichlorobenzene analysis from the Location A DHU groundwater samples are greater than their respective MCLs in the above Chemical Monitoring List, then Step 2B would be completed. If only benzene is higher than its MCL, then Solutia will discuss with EPA whether Step 2A or Step 2B is appropriate.
If the top of the Middle Hydrogeologic Unit sample (40 feet bgs) has exceedances of the above respective values, then Solutia will discuss with EPA to determine what, if any, additional actions should be taken.

Step 2A

- Seek access agreements to allow well construction and monitoring rights at Locations C1 and D1.
- Once access rights are obtained, construct a groundwater monitoring well at Locations A, C1, and D1. At each of the three locations, the new well would have a five-foot-long screen set at the same elevation as the sample depth of the highest of the three DHU geoprobe MCB concentrations at Location A (in Step 1).
- Once these three wells are developed, they would each be sampled for the compounds specified in the above Chemical Monitoring List, as well as the same list of monitored natural attenuation (MNA) parameters which are being sampled in the WGK Long-Term Monitoring Program. These three wells would be sampled once per quarter for four quarters. Groundwater levels would also be obtained each quarter for use in future DHU potentiometric maps.

Step 2B

- Install a sampling well at Location A, with a five-foot-long screen being set at the same elevation as the sample depth of the highest of the three DHU geoprobe MCB concentrations previously taken at Location A under Step 1.

- Seek access agreements to allow well construction and monitoring rights at Locations B, C2, and D2.

- Once access approval has been granted for Locations B, take geoprobe (or similar technology) groundwater samples at approximately 40 feet bgs, 100 feet bgs, 110 feet bgs, and 120 feet bgs, or to bedrock, whichever comes first.

- Analyze these four groundwater samples for the five compounds on the Chemical Monitoring List above. If one or more of the Location B geoprobe groundwater samples exceeds the concentrations listed above, then Solutia will discuss with EPA to determine what, if any, additional actions should be taken.

- If all four groundwater samples (at Location B) are less than the respective values presented in the Chemical Monitoring List, then construct a groundwater monitoring well at Locations B, C2, and D2. At each of the three locations, the five-foot-long screen will be set at the same elevation as the sample depth of the highest of the three DHU geoprobe MCB concentrations at Location B.

- Once wells at Location A, B, C2 and D2 are developed, they will each be sampled for the compounds specified in the above Chemical Monitoring List, as well as the same list of MNA parameters which are being sampled in the WGK Long-Term Monitoring Program. These four wells will be sampled once per quarter for four quarters. Groundwater levels will also be obtained each quarter for use in future DHU potentiometric maps.

Other Issues

- All data from these new wells installed in East St. Louis will be incorporated into the WGK Periodic Technical Review Document. This document will evaluate the effectiveness of MNA (per the Final Decision) using all available groundwater monitoring well data and also suggest future actions. This document will be due to EPA 90 days after four quarters of validated data is available from the newly installed East St. Louis wells.
- By August 31, 2012, Solutia will propose a methodology to EPA to monitor the stability of the northern plume boundary, considering potential impacts from the varying elevations of the Mississippi River and potential impacts of varying pumping rates by the Illinois Department of Transportation dewatering wells. The stability of this northern plume boundary will be assessed in the WGK Periodic Technical Review Document.
- The newly defined northern extent of the contaminant plume will be considered in Solutia's due diligence requirements (under the Final Decision) to detect any current and/or future off-site groundwater pumping activities that may impact the ability to effectively operate the GMCS and impact the groundwater gradient within the defined plume in the American Bottom aquifer.
- If wells C1 and D1 are constructed and have groundwater concentrations from the initial sampling exceeding the values listed in the Chemical Monitoring List, then Solutia will discuss with EPA to determine if additional wells need to be installed.
- Likewise, if wells C2 and D2 are constructed and have groundwater concentrations from the initial sampling exceeding the values listed in the Chemical Monitoring List, then Solutia will discuss with EPA to determine if additional wells need to be installed.
- Exact well locations will be adjusted based on the ability to obtain access agreements. If proposed locations are significantly different than the locations provided in the figure, then EPA concurrence will be obtained before finalizing the agreements and installing the wells.

Please let me know if the above course of action is approved.

G. M. (Jerry) Rinaldi - 2S
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[attachment "Potential Wells N of WGK 7-30-12.pdf" removed by Kenneth Bardo/R5/USEPA/US]
[attachment "Preliminary DHU Potentiometric Surface Map - November 2012.pdf" removed by Kenneth Bardo/R5/USEPA/US]